

Attorney Docket No.
COE-568

PATENT APPLICATION
Serial No. 10/767,600

AMENDMENTS TO THE CLAIMS

1. (Currently Amended): A system for monitoring and alerting to change in media adjacent a part of said system, comprising:

5 at least one array of optical fibers affixed to a support having a length, width and depth, each optical fiber having an end exposed orthogonal to said media and said length of said support,

~~wherein an optical signal is maintained on each said optical fiber at least during a portion of operation of said system, and~~

10 wherein said array is configured to provide~~communicates~~ a pre-specified level of detail as data regarding said change;

at least one source of optical signals in operable communication with each said optical fiber at least during a portion of operation of said system;

15 at least one optical coupler in operable communication with each of said optical fibers; and

at least one sub-system in operable communication with each said optical fiber at least during a portion of operation of said system,

wherein said sub-system processes said data are processed by said sub-system to provide real-time measurement of and alerting to said change, and

20 wherein said sub-system records and displays said change may be recorded and displayed via said sub-system.

2. (Currently Amended): The system of claim 1 in which said data regarding said at least one change is selected from the group consisting of: reflection coefficients, transmission coefficients, and combinations thereof.

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3. (Currently Amended): The system of claim 1 in which said optical fibers are energized in a pre-specified sequence using further comprising a multiplexer,
30 wherein said multiplexer may be employed to energize said optical fibers in a pre-specified sequence.

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4. (Currently Amended): The system of claim 1 in which said optical fibers are arranged in at least one vertical array upon a rigid support.
5. (Original): The system of claim 1 in which said optical fibers are plastic.
6. (Original): The system of claim 1 in which said optical fibers have an index of refraction of approximately 1.492.
7. (Original): The system of claim 1 in which said optical fibers are each incorporated as one of a pair in said optical coupler.
8. (Currently Amended): The system of claim 1 in which said sub-system includes at least an optical receiver, a high pass filter, an amplifier, a detector and a display.
- 15 9. (Original): The system of claim 8 further comprising a control device.
10. (Currently Amended): The system of claim 1 in which said sub-system comprises at least a power meter.
- 20 11. (Original): The system of claim 10 further comprising a processing and control device incorporating a display.
12. (Original): The system of claim 3 further comprising an umbilical cable in operable communication with at least said multiplexer, said source and said sub-system.
- 25 13. (Original): The system of claim 1 further comprising an anchoring device.
14. (Original): The system of claim 1 in which said source is a light emitting diode (LED).
- 30 15. (Original): The system of claim 14 in which said LED emits red light.

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16. (Currently Amended): The system of claim 1 in which at least one of said source-optical signals is energized using provided as a cyclical signal.

17. (Original): The system of claim 16 in which said cyclical signal is a square wave.

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18. (Original): The system of claim 17 in which said square wave is cycled at approximately three KHz.

19. (Currently Amended): The system of claim 1 8 in which said optical receiver is selected from the group consisting of a phototransistor, a photodiode, and combinations thereof.

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20. (Original): The system of claim 1 in which said sub-system further comprises:

at least one multi-channel multiplexed data acquisition printed circuit board incorporating at least one analog-to-digital converter;

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at least one personal computer, incorporating a display, in operable communication with said multi-channel multiplexed data acquisition printed circuit board; and

software loadable on said personal computer for processing said data.

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21. (Original): The system of claim 1 in which said coupler is a four-port optical splitter.

22. (Currently Amended): A system for monitoring and alerting to change in media, comprising:

25 at least one optical means for sensing change in at least one characteristic of said media and transmitting data representing said change;

at least one array of said optical means,

wherein an end of each said optical means is affixed to a support having a long axislength, width and depth, and

wherein each said optical means is exposed orthogonal to said media with respect to and said long axislength, and

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wherein said array ~~is configured to provide~~ communicates a pre-specified level of detail regarding said change;

at least one means for energizing each said optical means, said means for energizing in operable communication with each said optical means;

5 at least one means for processing said data, said means for processing in operable communication with each said optical means,

wherein said means for processing provides real-time measurement of and alerting to said change, and

wherein said means for processing displays and records said change; and

10 at least one means for coupling together said optical means, said means for energizing and said means for processing.

23. (Currently Amended): A method for monitoring and alerting to change in media, comprising:

15 providing at least one array having at least one optical fiber, said array affixed to at least one support having a long-axislength, width and depth;

exposing an end of each said optical fiber orthogonal to said media ~~with respect to~~ and said long-axislength;

20 configuring said array to provide a pre-specified level of detail regarding said change;

impressing an optical signal from at least one source on each said optical fiber in said array;

collecting said impressed optical signal and a response signal of said media to said impressed optical signal;

25 providing a sub-system in operable communication with each said optical fiber, wherein said sub-system processes said response to enable real-time measurement of and alerting to said change, and

wherein said sub-system displays and records said change; and

30 providing at least one coupler in operable communication with each said optical fiber, said source, and said sub-system.